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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,477	10/29/2003	Jason D. Bonk	57071US041	6907

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EXAMINER	
HUANG, EVELYN MEI	

ART UNIT	PAPER NUMBER
1625	

DATE MAILED: 05/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/696,477	BONK ET AL.	
	Examiner	Art Unit	
	Evelyn Huang	1625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *30,39,44 and 49-52* is/are pending in the application.

4a) Of the above claim(s) *50 and 51* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *30,39,44,49 and 52* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 30, 39, 44, 49-52 are pending. Claims 1-29, 31-38, 40-43, 45-48 have been canceled according to the preliminary amendment filed on 10-29-2003.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 30, 39, 44, 49, 52 drawn to a method of treating a neoplastic disease with the compound of formula I, II, or a compound of claim 49.

II. Claim 33, drawn to a method of inducing cytokine biosynthesis with the compound of claim 49.

III. Claim 34, drawn to a method of treating a viral disease with the species compound of claim 49.

The inventions are distinct, each from the other because of the following reasons: these groups are drawn to different method of use with compounds of different scope. Group I is drawn to a method of treating a neoplastic disease with the compound of formula I, II, or a compound of claim 49. Group II is drawn to a method of inducing cytokine biosynthesis. Group III is drawn to a method of treating a viral disease. They have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II or III, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Mr. Ersfeld on 4-30-2004 a provisional election was made with traverse to prosecute the invention of Group I, claims 30, 39, 44, 49, 52. Affirmation of this election must be made by applicant in replying to this Office action. Claims

50, 51 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 30, 39, 44, 52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

a. *Nature of the invention.*

The instant invention is drawn to a thioether substituted imidazoquinoline for inducing cytokine biosynthesis in an animal.

b. *State of the prior art and the level of the skill in the art.*

Imidazo[4,5-c]quinolin-4-amine derivatives are known (Gerster I, 5266575, PTO-1449, columns 9-10). Certain imidazo[4,5-c] quinoline compounds have been shown to induce TNF and IL-1 production (Testerman, PTO-1449, abstract). Although interferon alpha has been implicated in many diseases, including neoplastic diseases, a nexus between the induction of interferon biosynthesis and the treatment of these diseases has not been fully established. Furthermore, at present there is no known umbrella drug that can treat any type of neoplastic

diseases, since the different neoplastic diseases are of different origins, have different cellular mechanisms and consequently, would require different treatment protocols.

The level of the skill in the antiviral and anticancer art is high.

c. *Predictability/unpredictability of the art.*

The high degree of unpredictability is well-recognized in the anticancer art. For example, some drugs known to be effective against small cell lung cancer are inactive in melanoma (Sof'ina et al. Experimental Evaluation of Antitumor Drugs in the USA and USSR and Clinical Correlations. NCI Monograph 55. NIH Publication No. 80-1933 (1980), page 77). The 1, 3-cyclohexanediones shown to be active in test against human sarcoma is found to be inactive against other types of cancer such as leukemia, lymphosarcoma etc. (Strandtmann, J. Med. Chem. (1967), 10(6):1063-1065). Correlation between the anti-tumor drugs in experimental system and in patient treatment is incomplete (Sof'ina, page 76). Furthermore, it is known that a slight change in the structure of the compound would drastically change its biological activity as evidenced in the very different ED_{50} values for the structurally similar compounds (Strandtmann, page 1065, Table II). One of ordinary skill in the art therefore would have little basis to extrapolate the data from one set of compounds to other structurally dissimilar compounds.

d. *Amount of guidance/working examples.*

The preparation of the inventive compounds has been described. The ability of the example compounds to induce interferon and TNF in human blood cells is shown in the specification. The procedures for assessment of the anti-viral or anti-neoplastic activity are not described. No in vivo procedures are described.

e. *Breadth of the claims.*

Applicant's assertion that all the structurally diverse compounds embraced by instant claims 30, 39, including those having aryl, heteroaryl, heterocyclyl, further substituted with optionally substituted aryl, heteroaryl, heterocyclyl, or the compounds of claims 44, 49 are effective in treating any or all neoplastic diseases does not commensurate with the scope of the objective enablement, especially in view of the high degree of unpredictability in the anti-cancer art, the working examples limiting to induction of interferon alpha and TNF, and the fact that at present there is no known umbrella drug effective for treating all types of neoplastic diseases (paragraphs c, d above).

f. *Quantitation of undue experimentation.*

Since insufficient guidance and teaching have been provided by the specification (paragraphs c-e above), one of ordinary skill in the art, even with high level of skill, is unable to use the instant compound as claimed without undue experimentation.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 30, 39, 44, 49, 52 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12, 17-24, 29-34 of U.S. Patent No. 6664264.

The patented method comprising administering the patented compound (as exemplified by the compounds of claim 12) to the animal having a neoplastic disease is embraced by the instant method of treating a neoplastic disease with the compound wherein n=0.

The compound of instant claim 49, 2-butyl-1[2-(ethylsulfonyl)-ethyl-1H- imidazo[4,5-c]quinoline-4-amine, differs from the patented 2-butyl-1[3-(methylsulfonyl)-propyl-1H-imidazo[4,5-c]quinoline-4-amine (claim 12) in having an ethylsulfonyl-ethyl instead of methylsulfonyl-propyl. However, ethyl is the next adjacent homolog of methyl, and propyl, which are within the meaning of alkyl in the generic claims. Furthermore, ethyl is also exemplified in the examples. One of ordinary skill in the art would therefore be motivated to

modify the patented compound with the alternative substituents to arrive at the instant with the reasonable expectation of obtaining an additional cytokine biosynthesis-inducing compound.

8. Claims 30, 39, 44, 49, 52 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-11, 23, 24-27, 33-35, 40-45 of U. S. Patent No. 6667312.

The compounds of instant claim 49 are species encompassed by the patented generic compound claims 1-11, and are specifically claimed in the patented species claim 23 (column 96, lines 36-3, column 97, lines 22-23, 33-34, 51-52).

The patented method comprising administering the patented compound to the animal having a neoplastic disease is embraced by the instant method of treating a neoplastic disease with the same compound.

9. Claims 30, 39, 44, 49, 52 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 22, 26, 31, 32, 35 of copending Application No. 10/696684. Although the conflicting claims are not identical, they are not patentably distinct from each other.

The copending method of treating a neoplastic disease comprising administering to an animal in need thereof, the compound of copending claim 26 (species within the copending generic claim 22), is encompassed by the instant method.

The compound of copending claim 32 has a 2-butyl-1-(methansulfonyl-pentyl) whereas the instant has a 2-ethyl-1(methylsulfonyl-ethyl). However, butyl and ethyl, pentyl and ethyl are optional choices, and are exemplified in the compounds of copending claim 26. One of ordinary skill in the art would therefore be motivated to modify the copending compound with the alternative substituents to arrive at the instant with the reasonable expectation of obtaining an additional cytokine biosynthesis-inducing compound.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

10. No claims are allowed.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Evelyn Huang whose telephone number is 571-272-0686. The examiner can normally be reached on Tuesday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph McKane can be reached on 571-272-0699. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Evelyn Huang
Primary Examiner
Art Unit 1625